

## **Solar Power System for Water Facility in Lancaster**

### Summary

The Los Angeles County Department of Public Works, Waterworks Division (Waterworks), provides customers of five districts with water from local groundwater and purchased imported water. The largest district, District No. 40, Antelope Valley, serves approximately 170,000 people through 55,000 connections. Waterworks uses a large amount of energy primarily for pumping water. This one district alone uses approximately 25 million kilowatt-hours (kWh) per year or 25 gigawatt-hours per year. Electric energy costs are a significant percentage of total operating costs. The number of wells, extensive service area size, and elevation changes within the Antelope Valley create the need for a vast amount of energy to pump water. Solar power is an increasingly cost effective means to secure competitive, stable, long term electricity prices; reduce carbon footprint; and improve the sustainability of California public water agencies.

In October 2012 Waterworks completed construction of a solar power system at a well field in Lancaster. The system is a 350-kilowatt, ground mounted single-axis tracker solar photovoltaic system, expected to produce 760,000 kWh per year. The solar photovoltaic panels are installed at a 2.5 acre Waterworks facility on 5th Street West at Avenue K-8 in Lancaster. The panels will power two of the three groundwater wells on that site, pumping about 1,500 acre-feet of water per year, equivalent to supplying water to 1,800 homes each year in Lancaster. The design and construction of the system was completed by Chevron Energy Solutions.

### Benefits to Environmental Resources

The total energy produced during 5 mostly non-peak producing months of operation was 300,000 kWh. This system will reduce the amount of harmful emissions that would otherwise be created from fossil fuel generated energy. This system is expected to reduce 750,000 pounds of greenhouse gases per year. The generation of this emission-less energy source is equivalent to saving 25,000 gallons of gasoline thus far to date.

### Contribution to wellbeing of DPW employees and the County Community

As a public agency, the District is entrusted by their customers to provide a safe and reliable supply of water at the lowest possible cost. The project creates financial stability for the District and its customers. Providing drinking water through a means of renewable energy will stabilize energy costs during a rise of typical energy utility rates. This savings in turn will then be passed on to the District's customers by securing constant or even lower water rates over time. This project also serves as the pilot for implementing additional solar power systems throughout the District, which will further benefit its customers. Solar power systems create jobs for DPW employees and the County community even after construction as there is an ongoing need for operation and maintenance.

In addition, the community benefits from the reduction in emissions discussed above. The site was already previously disturbed so there was no conflict with the potential for alternative community use. The project does not negatively disturb the environment nor does it increase traffic in any way.

### Economical contribution

Waterworks completed construction and installation of a \$2 million Solar Power System at a groundwater well field in Lancaster. Of the \$2 million construction cost, \$650,000 is expected to be reimbursed to Waterworks by the California Solar Initiative Program. The project's life expectancy is estimated to be 25 years with an estimated 13 year payback period for the Waterworks' share of the project cost. After 13 years, the system will be generating power for the two wells at no cost to Waterworks. During the remaining 12 years of its expected useful life, Waterworks will save an estimated \$2.5 Million.

